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Robust Summaries and Dossier for N,N-Dimethyldecanamide (CAS No. 14433-76-2)

Existing Chemical	: ID: 14433-76-2
CAS No.	: 14433-76-2
EINECS Name	: N,N-dimethyldecan-1-amide
EINECS No.	: 238-405-1
Molecular Formula	: C12H25NO
Producer Related Part	
Company	: PCA Services, Inc.
Creation date	: 20.09.0002
Substance Related Part	
Company	: PCA Services, Inc.
Creation date	: 20.09.0002
Memo	:
Printing date	: 12.11.2002
Revision date	:
Date of last Update	: 11.11.2002
Number of Pages	: 22
Chapter (profile)	: Chapter: 1, 2, 3, 4, 5, 7
Reliability (profile)	: Reliability: without reliability, 1, 2, 3, 4
Flags (profile)	: Flags: without flag, confidential, non confidential, WGK (DE), TA-Luft (DE), Material Safety Dataset, Risk Assessment, Directive 67/548/EEC, SIDS

1. General Information

Id 14433-76-2

Date 12.11.2002

1.0.1 OECD AND COMPANY INFORMATION

Type : cooperating company
Name : The C. P. Hall Company
Partner :
Date : 20.09.2002
Street : 5851 West 73rd Street
Town : 60499 Bedford Park, Illinois
Country : United States
Phone :
Telefax :
Telex :
Cedex :
Reliability : (1) valid without restriction
24.09.2002

1.0.2 LOCATION OF PRODUCTION SITE

1.0.3 IDENTITY OF RECIPIENTS

1.1 GENERAL SUBSTANCE INFORMATION

Substance type : organic
Physical status : liquid
Purity : % w/w
19.09.2002

1.1.0 DETAILS ON TEMPLATE

1.1.1 SPECTRA

1.2 SYNONYMS

decanoic acid dimethylamide
21.09.2002

N,N-dimethylcapramide
21.09.2002

N,N-dimethyldecanamide
21.09.2002

N,N-dimethyldecanoic acid amide
Reliability : (1) valid without restriction
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1.3 IMPURITIES

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1.4 ADDITIVES

1.5 QUANTITY

1.6.1 LABELLING

1.6.2 CLASSIFICATION

1.7 USE PATTERN

1.7.1 TECHNOLOGY PRODUCTION/USE

1.8 OCCUPATIONAL EXPOSURE LIMIT VALUES

1.9 SOURCE OF EXPOSURE

1.10.1 RECOMMENDATIONS/PRECAUTIONARY MEASURES

1.10.2 EMERGENCY MEASURES

1.11 PACKAGING

1.12 POSSIB. OF RENDERING SUBST. HARMLESS

1.13 STATEMENTS CONCERNING WASTE

1.14.1 WATER POLLUTION

1.14.2 MAJOR ACCIDENT HAZARDS

1.14.3 AIR POLLUTION

1.15 ADDITIONAL REMARKS

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1.16 LAST LITERATURE SEARCH

1.17 REVIEWS

1.18 LISTINGS E.G. CHEMICAL INVENTORIES

2. Physico-Chemical Data

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2.1 MELTING POINT

Method : Other: Differential scanning Calorimetry (DSC)
Year : 2002
GLP : No
Test substance : as prescribed by 1.1 - 1.4 (Typical commercial grade material, purity =>98%).
Result : -11 to -7 ° C
Test Condition : The heating/cooling rate was 10C/min. The lower temperature given is the onset of the melting curve and the higher temperature is the peak.
Reliability : (2) Valid with restrictions. Study details not documented.
Reference : Internal company data from The CP Hall Company

Sublimation :
Method : other
Year : 2002
GLP : no
Test substance : as prescribed by 1.1 - 1.4
Result : EPIWIN MBPWIN estimated a melting point of 60.83 degrees C. This estimation is unreliable, since the chemical is known to be a liquid at room temperature.
Reliability : (3) invalid
20.09.2002 (10)

2.2 BOILING POINT

Value : ca. 289.7 ° C at 1016 hPa
Decomposition :
Method : other
Year : 2002
GLP : no
Test substance : as prescribed by 1.1 - 1.4
Method : EPIWIN MPBPWIN (v1.40) uses the adapted Stein and Brown method to estimate boiling point. The input into the EPIWIN program was the CAS No. of the test substance.
Reliability : (2) valid with restrictions
20.09.2002 (11)

2.3 DENSITY

Type : relative density
Value : = .88 at ° C
Method : OECD Guide-line 109 "Density of Liquids and Solids"
Year : 1995
GLP : yes
Test substance : as prescribed by 1.1 - 1.4
Method : The test method was OECD Guideline No. 109, corresponding to EC Guideline A.3.
Test substance : The test substance was dimethyldecanamide, Batch 9301ELB02. The chemical identity was confirmed by H-NMR-spectrum and mass spectrum. The test material purity was determined to be 98.8% by GLC.
Reliability : (1) valid without restriction
20.09.2002 (1)

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2.3.1 GRANULOMETRY

2.4 VAPOUR PRESSURE

Value : = .00114 hPa at 25° C
Decomposition :
Method : OECD Guide-line 104 "Vapour Pressure Curve"
Year : 1994
GLP : yes
Test substance : as prescribed by 1.1 - 1.4
Method : OECD Guideline No. 104, corresponding to EEC Guideline A4.
Result : The vapor pressure at 20 degrees C was calculated to be 0.000668 hPa.
Test condition : The gas saturation method used for the vapor pressure determination passes nitrogen as an inert carrier gas over the test substance, thereby saturating the nitrogen with vapor up to the vapor pressure of the test substance and transporting the vapor with the nitrogen flow into a trap. After quantitative determination of the substance in the trap, the vapor pressure, i.e., the partial vapor pressure can be calculated, using the general gas equation and from the volume of nitrogen used to transport this quantity of substance.

The apparatus used for the measurement consisted of a gas supply unit, a saturator column, and a trap. Decanophenone was used as the internal standard for HPLC determinations. The determination consisted of the following steps: loading the saturator columns with the test substance, saturation of the carrier gas stream with the test substance, preparation of the samples collected for analytical determination of the test substance, quantitative HPLC determination of the test substance, and calculation of the vapor pressures and generation of the vapor pressure curve. The analytical concentration measurements were validated, and the relative response of dimethyldecanamide and decanophenone at various concentrations were determined. The stability of the solutions and the stability of the test substance under the experimental conditions were confirmed. No decomposition or evaporation from the test containers and equipment were observed over 16 days.

Test substance : The test substance was Hallcomid C10 (trade name), batch 930129ELB02. Mass spectra and H-NMR-spectra were used to confirm the chemical identity of the test substance. The test substance was certified by GLC to be 98.8% pure.

Reliability : (1) valid without restriction

08.10.2002

(16)

Value : ca. .002 hPa at 25° C

Decomposition :

Method : other (calculated)

Year : 2002

GLP : no

Test substance : as prescribed by 1.1 - 1.4

Method : EPIWIN MPBPWIN (v1.40) used the Modified Grain Method for estimating vapor pressure. Input to the EPIWIN program was the CAS No. for the test substance.

Reliability : (2) valid with restrictions

21.09.2002

(9)

2.5 PARTITION COEFFICIENT

Log pow : = 3.92 at 24° C

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Method	OECD Guide-line 107 "Partition Coefficient (n-octanol/water), Flask-shaking Method"
Year	: 1993
GLP	: yes
Test substance	: as prescribed by 1.1 - 1.4
Method	: Shaking method according to OECD Guidelines No. 107 (corresponding to EEC Guidelines A8).
Test condition	: A preliminary test was performed according to the shaking method with the partition coefficient determined to be 6700 (log Pow 3.83). For the studies, demineralized water was used, the purity of which was equivalent to that of bidistilled water from a quartz distillation apparatus. The water and the n-octanol (purity >99%) were mutually saturated by stirring with a sufficient quantity of the other component of the partition system. The test vessels containing stock solution, water and n-octanol were rotated 100 times, through 180 degrees to thoroughly mix the contents. The solutions from both phases were analyzed using a modular HPLC chromatograph, Model LC-6A with spectrophotometric SPD-6A. It became evident from the chromatograms that no degradation of the test substance occurred under test conditions. Calibration solutions of the test substances at different concentration levels were measured in connection with the determinations of the partition coefficients in order to establish reproducibility and linearity of the analytical HPLC method.
Test substance	: The test substance was Hallcomid C10 (tradename), Batch 930129ELB02, chemical identity confirmed by mass spectra and H-NMR-spectra, and purity determined by GLC to be 98.8% pure.
Reliability 08.10.2002	: (1) valid without restriction (15)
Log pow	: ca. 3.44 at ° C
Method	other (calculated)
Year	: 2002
GLP	: no
Test substance	: as prescribed by 1.1 - 1.4
Method	: EPIWIN KOWWIN calculates Log Kow by summing individual contributions to Log Kow for each fragment in the molecule, based on values assigned in the program for each fragment.
Reliability 20.09.2002	: (2) valid with restrictions (8)

2.6.1 WATER SOLUBILITY

Value	: = 340 mg/l at 20 ° C
Qualitative	:
Pka	: at 25 ° C
PH	: = 7 at and ° C
Method	: OECD Guide-line 105 "Water Solubility"
Year	: 1994
GLP	: yes
Test substance	: as prescribed by 1.1 - 1.4
Method	: Flask method according to OECD-Guidelines No. 105 (corresponding to EC Guidelines A6).
Remark	: Although the solubility was established only for neutral water in equilibrium with atmospheric carbon dioxide, solubilities will be similar in the cases of slightly acidic or alkaline solutions (pH 3-9), because salt formation by

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Test condition

deprotonation or protonation in this pH range can be ruled out due to the chemical structure of an aliphatic tertiary carboxylic acid amide of the compound.

: For the study, demineralized water was used, the purity of which was equivalent to that of bidistilled water from a quartz distillation apparatus. The water used was not buffered and in equilibrium with atmospheric carbon dioxide. The water and the n-octanol (purity >99%) were mutually saturated by stirring with a sufficient quantity of the other component of the partition system.

1.0 grams of test substance were weighed into a 100 ml Erlenmeyer flask and added with 100 ml water. After a magnetic bar had been introduced, the flasks were put into a water bath thermostated at 20 degrees C. The test substance was suspended by intensively stirring by means of a magnetic stirrer below the water-bath. In order to estimate the rate of establishment of the solubility equilibrium, approx. 10 ml of suspension were sampled after increased stirring times, filled into a polyethylene beaker and centrifuged in a thermostatically controlled centrifuge at 18000 rpm and 20 degrees C for 50 mins. The upper layer of the centrifuged sample was removed and discarded using a Teflon tube and applying reduced pressure. Portions from the clear solutions of the middle layer were diluted 1:10 and transferred into sampler bottles for concentration by HPLC.

The solutions from both phases were analyzed using a modular HPLC chromatograph, Model LC-6A with spectrophotometric SPD-6A. The concentration of samples resulting from the saturation procedure was measured in a sequence after the 24 hours sample had been drawn and again after further 24 hours of standing at ambient temperature. By comparing relative responses with that of freshly prepared calibration solutions, it became evident that no degradation of the test substance occurred under test conditions.

Test substance

It became evident from the concentration measurements that the solubility equilibrium was reached after 30 minutes of stirring.

: The test substance was Hallcomid C10 (tradename), Batch 930129ELB02, chemical identity confirmed by mass spectra and H-NMR-spectra, and purity determined by GLC to be 98.8%.

Reliability
08.10.2002

: (1) valid without restriction

(17)

Value

: ca. 50.51 mg/l at ° C

Qualitative

:

Pka

: at 25 ° C

PH

: at and ° C

Method

: other

Year

: 2002

GLP

: no

Test substance

: as prescribed by 1.1 - 1.4

Method

: EPIWIN WSKOW calculates water solubility based on Log Kow, using the equation $\text{Log S (mol/L)} = 0.796 - 0.854 \text{ Log Kow} - 0.00728 \text{ MW} + \text{correction}$. The Log Kow inputted was 3.44.

Reliability
20.09.2002

: (2) valid with restrictions

(12)

2.6.2 SURFACE TENSION

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2.7 FLASH POINT

2.8 AUTO FLAMMABILITY

2.9 FLAMMABILITY

2.10 EXPLOSIVE PROPERTIES

2.11 OXIDIZING PROPERTIES

2.12 ADDITIONAL REMARKS

3. Environmental Fate and Pathways

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3.1.1 PHOTODEGRADATION

Type	: water
Light source	: Xenon lamp
Light spect.	: = 300 - 800 nm
Rel. intensity	: = .9 - 1 based on Intensity of Sunlight
Spectr. of subst.	: lambda (max, >295nm) : 290 nm
	: epsilon (max) :
	: epsilon (295) :
Conc. of subst.	: at 25 degree C
Direct photolysis	
Half-life t1/2	: > 30 day
Degradation	: % after
Quantum yield	:
Deg. Product	:
Method	: EPA Guide-line subdivision N 161-2 "Photodegradation studies in water"
Year	: 1995
GLP	: yes
Test substance	: as prescribed by 1.1 - 1.4
Method	: R C C Umweltchemic AG states that it is responsible for the performance of the study according to EPA guideline: (U.S.) EPA 540/9-82-021: Pesticide Assessment Guidelines, Subdivision N: Chemistry Environmental Fate, Section 161-2: Photodegradation Studies in Water. Also followed was (U.S.)EPA: Pesticide Assessment Guidelines, Subdivision N, Environmental Fate, Section 161-2, Aqueous Photolysis Studies, Standard Evaluation Procedure for Aqueous Photolysis Studies, 1985.
Result	: The amounts of radioactivity were almost completely recovered after 30 days of illumination (92.4-98.8%). The amounts recovered after incubation in the dark for 30 days (the control) was 93.1-101.7%. Based on TLC- and HPLC-analyses, almost exclusively the parent compound (CAS No. 14433-76-2) was found at all time intervals for the illuminated samples and for the dark controls. Cumulative volatiles increased during the period of illumination from <0.05% to 0.3% at day 30.
Test condition	: The test material was stored in the dark at about - 20 degrees C. Reference compounds that were possible products of photodegradation were collected and characterized by TLC for comparison with degradation products.

Bidistilled water was used, with a pH of 6.0, conductivity 2.3 uS/cm, and hardness <0.2 mmol/l. The pH was adjusted to 5.0 using sodium acetate and acetic acid buffering, since it had been demonstrated that the test article was hydrolytically most stable at that pH. Before incubation, test solutions were sterilized by a sterile filter, and the application devices and vessels were autoclaved for at least 30 min. at 120 degrees C to exclude the possibility of microbial degradation.

The study was performed in the ORIGINAL HANAU SUNTEST apparatus. The Xenon burner used had a max. 765 W/m² at max. UV filtering (lambda <800 nm) with controllable irradiance between 400-765 W/m². The radiation in the range between 300-800nm is very similar to the global radiation of sunlight according to daylight D 65. Light intensity was measured using a spectroradiometer LI-COR Model LI-1800. The average light intensity during incubation was 97.0 KLux, which is comparable to the light intensity of natural daylight in the summer.

An aliquot of 200 ml sterile buffer solution containing the test article was illuminated with a light/dark cycle of 12 hours at a temperature maintained at 25 +/-1 degrees C. The system was continuously stirred with a magnetic stirrer ventilated through a sterile filter with air. The outcoming air was

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passed through a CO₂ trapping system (NaOH) and through ethylene glycol for absorption of volatiles. For control, a sterile reaction vessel with an aliquot of 150 ml buffered test solution was incubated under identical conditions in the dark.

During the 30 day illumination period samples were taken at 0, 3, 7, 14, 21 and 30 days. After determination of total radioactivity, the samples were further characterized for parent compound and degradation products. pH of the test solutions were monitored at days 0, 14, and 30 of the illumination period. The aqueous samples were analysed by TLC and HPLC.

Test substance : N, N-Dimethyldecanoic acid amide (CAS No. 14433-76-2) Batch Number 930129ELB02, 98.8% purity on Dec. 21, 1992 as confirmed by High performance liquid chromatography. The 14 C labelled material was labelled on the carbonyl carbon and had an average purity of 97.6% Multiple purity checks indicated that the test substance is stable under the storage conditions.

Conclusion : The study author concluded that the study showed that N,N-dimethyldecanoic acid amide was stable against direct photolysis at pH 5.0 during illumination at 25 degrees C for 30 days, and that the half life was much greater than 30 days..

Reliability : (1) valid without restriction

(3)

Type	:	soil	
Light source	:	Xenon lamp	
Light spect.	:	= 300 - 800 nm	
Rel. intensity	:	= .9 - 1 based on Intensity of Sunlight	
Spectr. of subst.	:	lambda (max, >295nm)	: 290 nm
		epsilon (max)	:
		epsilon (295)	:

Conc. of subst. : 4 mg/l at 25 degree C

Direct photolysis
Half-life $t_{1/2}$: = 33 day

Degradation : % after

Quantum yield :

Deq. Product : yes

Method : EPA Guide-line subdivision N 161-3 "Photodegradation studies on soil"

Year : 1996

GLP : yes

Test substance : as prescribed by 1.1 - 1.4

Result : Total recoveries of radioactivity amounted to 91.8-101.3% and 96.5-101.3% of radioactivity applied in illuminated and dark samples respectively. In the illuminated soil samples, cumulative volatiles, characterized as $^{14}\text{CO}_2$, increased to 16.0% at day 30, indicating that complete mineralization occurred. Negligible amounts of volatiles besides CO_2 were found in the ethylene glycol trap (0.1%). In the control samples incubated in the dark, negligible amounts of volatiles were found in the ethylene glycol trap.

In the illuminated samples, the parent compound decreased from 94.7-96.6% at day 0 to 47.3-53.7% at day 30. In the control sample incubated in the dark, the parent compound decreased slightly to 86.8% at day 30.

N,N-dimethylsuccinic acid monoamide was identified as the primary degradation product other than CO₂

Test condition : The test article was analytically confirmed to be stable on storage and in the test solutions.

The study was performed in the ORIGINAL HANAU SUNTEST CPS apparatus, equipped with a xenon lamp. The xenon lamp provided a radiation in the range between 300–800 nm. Wavelengths <290 nm were

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filtered out.

The soil was sampled in Porterville Calif. and classified as sandy loam. The soil was prepared as thin layers on glass plates. To evaluate degradation by soil microorganisms during photolysis, vital soil (unsterilized) was used. In this way, taking into account the controls in the dark, degradation by specific soil processes could be separated from the photolysis process. The test substance was applied to the soil at an average dose level of 4.1 mg/kg and exposed to artificial light using a 12 hour light/dark cycle during 30 days.

During illumination samples were taken at the intervals of 0, 1, 3, 7, 14, and 30 days. Volatiles were measured for both the illuminated sample and an identical sample used as a control kept incubated under identical conditions, except being kept in the dark. Volatiles and $^{14}\text{CO}_2$ were measured.

Light intensity was measured using a spectroradiometer (LI-1800). Light intensity was set to about 90 KLux and averaged 92.1 KLux. Radioactivity was determined on Packard liquid scintillation counters equipped with DPM.

Test substance	: N, N-Dimethyldecanoic acid amide (CAS No. 14433-76-2) Batch Number 930129ELB02, 98.8% purity on Dec. 21, 1992 as confirmed by High performance liquid chromatography. The ^{14}C labelled material was labelled on the carbonyl carbon and had a purity of 98.6% just prior to treatment.
Conclusion	: The author of study concluded that the data indicated that degradation of the test material on soil under illumination conditions simulating natural sunlight proceeded with a calculated half-life of 33.0 days.
Reliability 08.10.2002	: (1) valid without restriction (4)
Type	: air
Light source	:
Light spect.	: nm
Rel. intensity	: based on Intensity of Sunlight
Indirect photolysis	:
Sensitizer	: OH
Conc. of sens.	:
Rate constant	: ca. .000000000298 $\text{cm}^3/(\text{molecule} \cdot \text{sec})$
Degradation	: ca. 50 % after .4 day
Deg. Product	:
Method	: other (calculated)
Year	: 2002
GLP	: no
Test substance	: as prescribed by 1.1 - 1.4
Method	: EPIWIN AOP calculates the overall OH radical rate constant by summing up individual rate constants assigned in the program to reactions of OH radicals with individual bonds in the molecule. The half life is then calculated assuming first order kinetics with a constant concentration of OH radical.
Reliability 24.09.2002	: (2) valid with restrictions (5)

3.1.2 STABILITY IN WATER

Type	: abiotic
t1/2 pH4	: at degree C
t1/2 pH7	: at degree C
t1/2 pH9	: at degree C

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Deg. Product :
Method : other
Year : 1995
GLP : yes
Test substance : as prescribed by 1.1 - 1.4
Method : RCC states that it was responsible for performing the hydrolysis study according to the following EPA Guidelines and related amendments:

(US) EPA 540/9-82-021: Pesticide Assessment Guidelines, Subdivision N: Chemistry: Environmental Fate, Section 161-1.

(US) EPA: Pesticide Assessment Guidelines, Subdivision N, Environmental Fate, Section 161-1, Hydrolysis Studies, Standard Evaluation Procedure for Hydrolysis Studies, 1985.

(US) EPA: Pesticide Assessment Guidelines, Subdivision N, Environmental Fate, Section 161-1, Hydrolysis Studies, Acceptance Criteria, 1989.

(US) EPA: Pesticide Assessment Guidelines, Subdivision N, Environmental Fate, Section 161-1, Hydrolysis Studies, Addendum 3 on Data Reporting, 1988.

(US) EPA: Pesticide Assessment Guidelines, Subdivision N, Environmental Fate, Section 161-1, Hydrolysis Studies, Guidance for Summarizing Hydrolysis Studies, 1989.

(US)EPA: Pesticide Assessment Guidelines, Subdivision N, Environmental Fate, Section 161-1, Hydrolysis Studies, Study Compliance Checklist for Hydrolysis Studies, 1989.

Result

: The data demonstrated that during 30 days of incubation at 25 degrees C in aqueous solutions at pH 5, pH 7, and pH 9, the test substance was hydrolysed to an insignificant extent. Cumulative volatiles at the various sampling intervals specified under the test condition were all <0.05%. The mean percentages of radioactivity of the test substance recovered at the specified sampling intervals were 96.5% (standard deviation 2.6%) at pH 5, 95.1% (standard deviation 2.0%) at pH 7, and 93.8% (standard deviation 1.9%) at pH 9. Day 30 radioactivity of the parent compound (aqueous solution) were 98.6% for pH 5, 93.2% for pH 7, and 91.25 for pH 9.

Test condition

: The test material was stored at about 4 degrees C in the dark. The C14 labeled material (Batch A 387) was radiolabeled at the carbonyl carbon. Radiochemical purity was >98% and remained at that purity for several months through the conductance of the study. The amount of C14 labeled material was 1 mg, corresponding to about 100.5 uCi. The labeled material was stored at ca -20 degrees in the dark. A number of reference compounds were collected for the study to assist in identification of decomposition products from hydrolysis. These were not actively used, since the extent of hydrolysis was negligible under the test conditions.

Test solutions and test vessels were sterilized before incubation to minimize the process of microbial degradation during incubation. Bidistilled water was used and conductivity (2.3 uS/cm) and hardness (<0.2 mmol/l) were determined. Since the hydrolysis rate was studied at three different pHs, buffered solutions were prepared and appropriately diluted. Sodium acetate and acetic acid were used to prepare the pH 5.0 buffered solution. TRIS and 0.1N HCl were used for the pH 7.0 buffered solution. Boric acid and 0.1N NaOH were used to prepare the pH 9.0 solution. No pH changes were observed due to the addition of the test article.

Aliquots of the sterile buffer solutions containing the test article were incubated in Pyrex glass flasks in a water bath under darkness at the desired temperature of 25 degrees C (+/-0.2 degrees C). The flasks were ventilated with moistened air through a sterile filter. The outcoming air was

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passed through a CO₂-trapping system (2NaOH) and through ethylene glycol for absorption of volatiles.

During the 30-day incubation period at every pH duplicate samples were taken at 9 time intervals (0, 3, 7, 10, 14, 17, 21, 24, and 30 days). After determination of total radioactivity, the duplicate samples of six time intervals (0, 3, 7, 14, 21, and 30 days) were further characterized for parent compound and degradation products.

Radioactivity was determined using a liquid scintillation counter equipped with DPM and luminescence options (TRI-CARB 2000 CA or 2500 TR). All measurements were performed for a counting time allowing a counting error below 5% or maximally 20 minutes. All values were corrected for instrumental background. Measurements were performed at least in duplicate.

Test substance	:	The test substance was N,N-dimethyldecanoic acid amide (CAS No. 14433-76-2), Batch No. 930129ELB02 of 98.8% purity.	
Reliability	:	(1) valid without restriction	(2)
08.10.2002			
Type	:		
t1/2 pH4	:	at degree C	
t1/2 pH7	:	> 1 year at degree C	
t1/2 pH9	:	at degree C	
Deg. Product	:	not measured	
Method	:	other (calculated)	
Year	:	2002	
GLP	:	no	
Test substance	:	as prescribed by 1.1 - 1.4	
Method	:	EPIWIN HYDROWIN identifies the amide group as the only group in the molecule for which a half life can be estimated. The remainder of the molecule is a saturated long-chain alkyl group that is not normally subject to hydrolysis.	
Remark	:	The molecule is not expected to hydrolyze appreciably under neutral ambient conditions, because it does not contain functional groups expected to readily undergo hydrolysis.	
Reliability	:	(2) valid with restrictions	(7)
21.09.2002			

3.1.3 STABILITY IN SOIL

Type	:	laboratory	
Radiolabel	:	yes	
Concentration	:		
Soil temp.	:	degree C	
Soil humidity	:		
Soil classif.	:		
Year	:		
Deg. Product	:		
Method	:	other	
Year	:	1995	
GLP	:	yes	
Test substance	:	as prescribed by 1.1 - 1.4	
Method	:	The following guidelines were referenced for this study: (U.S.) EPA 540/9-82-021, Pesticide Assessment Guidelines, Subdivision N Chemistry: Environmental Fate, Section 163-1 Leaching and Adsorption/Desorption Studies, October 1982. The experimental design was partly based on the recommendations given by the OECD Guideline for Testing of Chemicals No. 106; "Adsorption/Desorption," adopted on May 12, 1981.	
Result	:	The adsorption and desorption of the test substance was determined in	

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four soils: a sandy loam from Porterville, California, a loamy sand from Illinois, a silt loam from Illinois, and a loam from Iowa.

The adsorption of the test substance was determined after 6 hours. The adsorption K_{oc} and desorption K'_{oc} are given in the following table:

SOIL	Adsorption K _{oc}	Desorption K' _{OC}
Soil I	351	526
Soil II	630	934
Soil III	569	864
Soil IV	559	717

Source : The C. P. Hall Company
Test substance : The test substance was N,N-dimethyldecanoic acid amide (CAS No. 14433-76-2), Batch No. 930129ELB02, 98.8% purity. The ¹⁴C radiolabeled material was labeled at the carbonyl carbon and was of 99.4% radiochemical purity as determined by HPLC analysis.
Conclusion : The study author concluded that the test substance is of low or medium to low mobility in the soils tested.
Reliability : (1) valid without restriction
26.09.2002

(18)

3.2 MONITORING DATA

3.3.1 TRANSPORT BETWEEN ENVIRONMENTAL COMPARTMENTS

Type : fugacity model level III
Media : water - air
Air (level I) : 1.15
Water (level I) : 38.1
Soil (level I) :
Biota (level II / III) : .841
Soil (level II / III) : 59.9
Method : other
Year : 2002
Method : Inputs to run this program are:

CAS No. 14433-76-2
molecular weight = 199.34
Henry's Law Constant = 5.2e-007 (Henrywin program)
vapor Pressure = 0.00157 mm Hg (Mppbpwin program)
liquid VP = 0.00355 mm Hg
M.P. = 60.8 degrees C (Mppbpwin program)
octanol-water partition coefficient = 2754.23
log K_{ow} = 3.44 from KOWWIN program
soil K_{oc} = 1.13e+003 (calc by EPIWIN KOC program)
air-water partition coefficient = 2.12665e-005
bioass to water partition coefficient = 551.646
temperature = 25 degrees C

Reliability : (2) valid with restrictions

20.09.2002

26.09.2002

(6)

3.3.2 DISTRIBUTION

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3.4 MODE OF DEGRADATION IN ACTUAL USE

3.5 BIODEGRADATION

Type : aerobic
Inoculum :
Contact time : 154 day
Degradation : = 50 % after 2.2 hour(s)
Result : other: rapidly biodegraded
Deg. Product : yes
Method : other
Year : 1995
GLP : yes
Test substance : as prescribed by 1.1 - 1.4
Method : The following guidelines were followed:

(U.S.) EPA 540/9-82-021: Pesticide Assessment Guidelines, Subdivision N: Chemistry: Environmental Fate, Section 162-1: Aerobic Soil Metabolism Studies, Section 162-2: Anaerobic Soil Metabolism Studies, October 18, 1982.

(U.S.) EPA Pesticide Assessment Guidelines, Subdivision N, Environmental Fate, Section 162-1, Aerobic Soil Metabolism Studies. Standard Evaluation Procedure for Aerobic Soil Metabolism Studies, 1985.

(U.S.) EPA Pesticide Assessment Guidelines, Subdivision N, Environmental Fate, Section 162-1, Aerobic Soil Metabolism Studies. Standard Evaluation Procedure for Aerobic Soil Metabolism Studies, 1985.

(U.S.) EPA Pesticide Assessment Guidelines, Subdivision N, Environmental Fate, Section 162-1, Aerobic Soil Metabolism Studies. Addendum 5 on Data Reporting, 1987.

(u.S.) EPA Pesticide Assessment Guidelines, Subdivision N, Environmental Fate, Section 162-1, Aerobic Soil Metabolism Studies, Acceptance Criteria, 1989.

Result : The mean recovery over the whole incubation period was 102.9% of the radioactivity applied. The test article was mineralized very fast and to a very high degree. After 1 day 33.5% of the radioactivity of the labeled test material was found as $^{14}\text{CO}_2$, after 2 days this portion amounted to 63.5%. At the end of the incubation (154 days) 83.3% of the applied radioactivity was found as $^{14}\text{CO}_2$. Negligible amounts of volatiles other than $^{14}\text{CO}_2$ were observed. Based on the data collected, a DT-50 value of 2.2 hours and a DT-90 value of 7.5 days were calculated. Metabolites like N,N-dimethylsuccinic acid monoamide and N,N-dimethylmalonic acid monoamide that were formed in the soil on day 1 were rapidly mineralized during further incubation.

Test condition : The aerobic degradation and metabolism of the test substance was investigated in one agricultural soil of the U.S. (sandy loam) at 20 +/- degrees C and 75% of 1/3 bar moisture in the dark for 154 days. The labeled test material was applied at an initial concentration of 40.07 ug/100 g dry soil equivalent (8939485 dpm) corresponding to 400.7 ug/kg soil. The study was performed in duplicate in metabolism flasks. The sampling days were 0, 1, 2, 3, 4, 7, 14, 28, 77, and 154 days.

The soil samples were extracted with acetonitrile and acetonitrile/water (1/1).

The extracted radioactive residues were analyzed by TLC and confirmed

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Test substance	: by HPLC. The amount of both parent substance and radioactive fractions was calculated.
Reliability 11.11.2002	: The test substance was N,N-dimethyldecanoic acid amide (CAS No. 14433-76-2), Batch No. 930129ELB02, 98.8% purity. The ¹⁴ C radiolabeled material was labeled at the carbonyl carbon and was of >98% radiochemical purity as determined by TLC and HPLC analysis. : (1) valid without restriction (19)
Type	: aerobic
Inoculum	:
Contact time	: 50 day
Degradation	: = 50 % after .3 day
Result	:
Deg. Product	: yes
Method	: other
Year	: 1995
GLP	: yes
Test substance	: as prescribed by 1.1 - 1.4
Method	: The following guideline was followed: Richtlinie Teil IV, 4-1 BBA der Bundesrepublik Deutschland: Verbleib von Pflanzenschutzmitteln im Boden - Abbau, Umwandlung und Metabolismus, Dezember, 1986.
Result	: Based on data collected during a 50 day incubation period DT-50 values of 0.02 day (Soil A) to 0.27 days (Soil C) were calculated. The DT-90 values amounted to 0.65, 1.14 and 2.46 days for soils A, B and C respectively. The test substance was mineralized to a very high degree. Totally >= 83% of the applied radioactivity were found in the form of ¹⁴ CO ₂ at the end of the 50 day incubation period. Two metabolites were found - N,N-dimethylsuccinic acid monoamide and N,N-dimethylmalonic acid monoamide. These metabolites rapidly degraded further to eventually form ¹⁴ CO ₂ .
Test condition	: The rate of decline (DT-50 and DT-90 values) of the test substance was determined in three soil incubated in the dark for 50 days at 20 degrees C under aerobic conditions. The three soils were [A (silt loam), B (loamy sand) and C (silt loam)] were treated with the radiolabeled test substance at a rate of 81 ug/100g of soil. The soil samples were extracted with acetonitrile, acetonitrile/water (1/1) and water. The extracted radioactive residues were analyzed by TLC and confirmed by HPLC. The amount of both parent substance and radioactive fractions was calculated.
Test substance	: The test substance was N,N-dimethyldecanoic acid amide (CAS No. 14433-76-2), Batch No. 930129ELB02, 98.8% purity. The ¹⁴ C radiolabeled material was labeled at the carbonyl carbon and was of 100% radiochemical purity.
Conclusion 08.10.2002	: The study author concluded that the rate of mineralization under the test condition was very high in all three soil types studied, and amounted to > 70% of the applied radioactivity after 4 days. (14)

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Type : aerobic
Inoculum :
Deg. Product :
Method : other: calculated
Year : 2002
GLP : no
Test substance : as prescribed by 1.1 - 1.4
Remark : The EPIWIN/BIOWIN program estimates biodegradability of the test substance using a mathematical algorithm that sums up individual chemical bond fragment valuations for biodegradation. The result is consistent with general knowledge that intermediate length aliphatic hydrocarbon chains having a terminal amide function are generally recognized to biodegrade readily.
Result : EPIWIN/BIOWIN predicts that the test substance will biodegrade fast.
Reliability : (2) valid with restrictions
A reliability rating of 2 was assigned, because the determination was estimated by a model.

11.11.2002

(13)

3.6 BOD5, COD OR BOD5/COD RATIO

3.7 BIOACCUMULATION

3.8 ADDITIONAL REMARKS

4. Ecotoxicity

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4.1 ACUTE/PROLONGED TOXICITY TO FISH

4.2 ACUTE TOXICITY TO AQUATIC INVERTEBRATES

4.3 TOXICITY TO AQUATIC PLANTS E.G. ALGAE

4.4 TOXICITY TO MICROORGANISMS E.G. BACTERIA

4.5.1 CHRONIC TOXICITY TO FISH

4.5.2 CHRONIC TOXICITY TO AQUATIC INVERTEBRATES

4.6.1 TOXICITY TO SOIL DWELLING ORGANISMS

4.6.2 TOXICITY TO TERRESTRIAL PLANTS

4.6.3 TOXICITY TO OTHER NON-MAMM. TERRESTRIAL SPECIES

4.7 BIOLOGICAL EFFECTS MONITORING

4.8 BIOTRANSFORMATION AND KINETICS

4.9 ADDITIONAL REMARKS

5. Toxicity

Id 14433-76-2

Date 12.11.2002

5.1.1 ACUTE ORAL TOXICITY

5.1.2 ACUTE INHALATION TOXICITY

5.1.3 ACUTE DERMAL TOXICITY

5.1.4 ACUTE TOXICITY, OTHER ROUTES

5.2.1 SKIN IRRITATION

5.2.2 EYE IRRITATION

5.3 SENSITIZATION

5.4 REPEATED DOSE TOXICITY

5.5 GENETIC TOXICITY 'IN VITRO'

5.6 GENETIC TOXICITY 'IN VITRO'

5.7 CARCINOGENITY

5.8 TOXICITY TO REPRODUCTION

5.9 DEVELOPMENTAL TOXICITY/TERATOGENICITY

5.10 OTHER RELEVANT INFORMATION

5.11 EXPERIENCE WITH HUMAN EXPOSURE

6. References

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Date 12.11.2002

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- (6) EPIWIN Fugacity Level III Program.
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- (8) EPIWIN KOWWIN Program (v1.66).
- (9) EPIWIN MPBPWIN Program (v1.40)
- (10) EPIWIN MPBPWIN Program (v1.40).
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7. Risk Assessment

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7.1 END POINT SUMMARY

7.2 HAZARD SUMMARY

7.3 RISK ASSESSMENT